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Gene Section
Mini Review

GMPS (guanine monphosphate synthetase)

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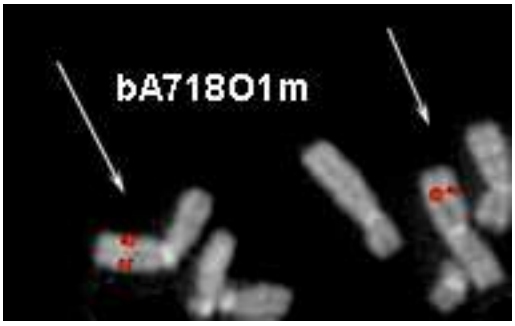
Identity

Other names: GMPS-PEN

HGNC (Hugo): GMPS

Location: 3q24



Probe(s) - Courtesy Mariano Rocchi, Resources for Molecular Cytogenetics.

DNA/RNA

Transcription

2212 bp mRNA; ORF: 2081 bp.

Protein

Description

693 amino acids; 76 kDa; there are two variant forms of human GMP synthetase; homodimerization; GMP synthetase contains two functional domains: a glutamine amidotransferase (glutaminase domain, with a conserved Cys-His-Glu triad), responsible for glutamine hydrolysis, and a synthetase domain; responsible for ATP hydrolysis and GMP formation.

Expression

Higher in proliferating, transformed cells than in nontransformed cells; in normal cells, higher expression in fibroblasts, followed by bone marrow, leukocytes, erythrocytes, placenta, and liver.

Localisation

Cytoplasmic.

Function

Enzyme of the de novo synthesis of guanine nucleotides: amidotransferase that catalyzes the amination of xanthosine 5 prime monophosphate to form GMP in the presence of ATP and glutamine; GTP is also involved in many enzymatic reactions important for cell division.

Implicated in

t(3;11)(q25;q23)

Disease

Treatment related acute non lymphoblastic leukemia (M4 ANLL).

Hybrid/Mutated gene

Fusion of MLL to GMPS.

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